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IEEE Recommended Practice for Monitoring Electric Power Quality

IEEE Power and Energy Society

Developed by the
Transmission and Distribution Committee

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USA

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(Revision of IEEE Std 1159-2009)

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Abstract: The monitoring of electrical characteristics of single-phase and polyphase ac power systems is encompassed in this recommended practice. It includes consistent descriptions of conducted electromagnetic phenomena occurring on power systems. This recommended practice describes nominal conditions and deviations from these nominal conditions that may originate within the source of supply or load equipment or may originate from interactions between the source and the load. Also, this recommended practice discusses power quality monitoring devices, application techniques, and the interpretation of monitoring results.

Keywords: assessment, compatibility, dip, distortion, electromagnetic phenomena, harmonics, IEEE 1159, imbalance, instruments, interference, monitoring, noise, power quality, rms variation, sag, susceptibility, swell, transient, unbalance

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Introduction

This introduction is not part of IEEE Std 1159-2019, IEEE Recommended Practice for Monitoring Electric Power Quality.

This recommended practice provides useful information for individuals interested in power quality monitoring projects. It provides definitions, summaries, and characterizations of typical power quality phenomena that lead to power quality problems. There is discussion on monitoring instruments and selecting the appropriate instrument for the task followed by information on the application of the monitors is provided, including: safety, locations to monitor, sensing inputs, and measurement thresholds. After the monitoring period is completed, there is information on validating the data, extracting the critical data, and interpreting both summaries and critical events.

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IEEE Recommended Practice for Monitoring Electric Power Quality

1. Overview

1.1 Scope

This recommended practice encompasses the monitoring of characteristics of electric power systems. It includes consistent descriptions of conducted electromagnetic phenomena occurring on power systems. This recommended practice presents definitions of nominal conditions and deviations from these nominal conditions that may originate within the source of supply or load equipment or may originate from interactions between the source and the load. This recommended practice also discusses measurement techniques, application techniques, and the interpretation of monitoring results.

1.2 Purpose

This recommended practice provides users with a consistent set of terms and definitions for describing power quality phenomena. An understanding of how power quality phenomena affects the power system and end-use equipment is required in order to make monitoring useful. Proper measuring techniques are required to safely obtain useful, accurate data. Appropriate location of monitors, systematic studies, and interpretation of results will enhance the value of power quality monitoring. The purpose of this recommended practice is to assist users as well as equipment and software manufacturers and vendors by describing techniques for defining, measuring, quantifying, and interpreting electromagnetic phenomena on the power system.

2. Normative references

No normative references apply to this recommended practice. Bibliographical references can be found in Annex D.